

# Claims

- [c1] Claim 1: A method of retrieving logs in a jungle, by means of noosing a winch (36) around one end of the log, securing it, and winching the log upward to the log assembly landing area which will be at higher ground, by a kind of machine described in Claim 2, which has been completely redesigned and modified to perform winching operations effectively, efficiently, and with less cost and hardware wherewithal equipment than in any previous prior art designs.
- [c2] Claim 2 : A Machine to perform the method described in Claim 1, the design of which is a composite of excavator features, (see Figure 1), and described as follows:
- a) Having an excavator body, including engine (4), tracks (5), and operator's cabin (6).
  - b) With an adapted backhoe bottom arm portion controlled by hydraulics, that is adapted to function as the main boom (2).
  - c) At one end of the boom is a winch pulley (1)
  - d) At the other end of the boom is a winch reel (3), strategically fitted to optimize the turning effect and stability of machine at high winching forces.

e) The reel is powered by diverting the engine hydraulic oil to power the reel, which passes through a solenoid valve enhancing the effect. (See Figure 5).

f) An appendage backhoe fore-arm(11) fitted under the boom with multiple purposes being:

i. Supporting the boom, which gives great stability to the machine during winching operations, in particular when heavy loads of logs or such heavy material are being winched.

ii. An excavator bucket(9) being adapted to this machine is of a design with a broad ground surface contact, which provides excellent stability for the machine during high winching forces.

iii. The bucket with grappler arm act to carry logs and move logs as part of logging operation.

iv. The bucket can be replaced by a grappler to then have two grapplers which can carry logs and such material effectively.

v. The bucket also services multiple roles as an excavator in earth works.

[c3] Claim 3 : A description of a machine as described in Claim 2, which has a much shorter boom than in prior art designs, thereby being less cumbersome, less heavy in weight, and less expensive to build.

- [c4] Claim 4: A Machine described in Claim 3 and Claim 2, which being lighter (as the boom is shorter) will not require a heavy counterweight to balance the machine, when heavy logs are being hoisted, as it is required in cases of large boom designs ascribed in prior art designs.
- [c5] Claim 5: A Machine as described in Claim 3 and Claim 2, whose range of operational activity is not limited to the reach of the length of the boom, as it is with prior art designs.
- [c6] Claim 6: A Machine as described in Claim 3 and Claim 2, whose boom being much lighter, thereby not adding to the weight of log to be hoisted, will be able to hoist logs located at greater distances away, as against prior art designs which have larger and heavier booms whose turning effect of the vertical component of its boom's weight, imposes a source of de-stability when a heavy load is lifted, and which require rectification by having heavy machine chassis and/or application of heavy counterweights.
- [c7] Claim 7: A Machine as described in Claim 3 and Claim 2, which having a greater range, requires less occasion of pathways being cleared for the movement of machinery, thereby having less damaging environmental impact as it

would be the case in other prior art designs.

[c8] Claim 8: A Machine as described in Claim 3 and Claim 2, which being lighter, less cumbersome, and with greater reach, is easier to deploy, more efficient and productive, at lesser costs, than prior art designs, and has higher yield and logging productivity rate than prior art designs.